

# ATN01-0070CSP1

## Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator

### DEVICE OVERVIEW

#### General Description

The ATN01-0070CSP1 is a surface mount GaAs MMIC attenuator in a chip scale package (CSP). This attenuator is an ideal solution for attenuating a signal and can be used in a wide range of applications. The ATN01-0070CSP1 features a typical 1.3 dB attenuation with 0.2 dB attenuation flatness and 23 dB return loss across the DC-70 GHz bandwidth. The CSP allows for extreme miniaturization of SMT footprint while providing die-level performance. GaAs MMIC technology provides consistent unit-to-unit performance in a small, low-cost form factor. A 50-ohm match is maintained over the entire operating frequency range.



[Download s-parameters here](#)

#### Features

- 1.5 x 1.5 mm chip scale package
- 1.3 dB attenuation
- 0.2 dB attenuation flatness
- 23 dB return loss
- 1 W RF Power Handling
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

#### Applications

- 5G
- Test Equipment
- Precision Characterization
- Airborne Applications
- Amplitude Matching
- High Channel Count Systems

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
ATN01-0070CSP1	Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator	CSP1	REACH RoHS	Released	EAR99
<u>EVB-ATN01-0070</u>	Evaluation Board, Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator	EVB	REACH RoHS	Released	EAR99

### Table Of Contents

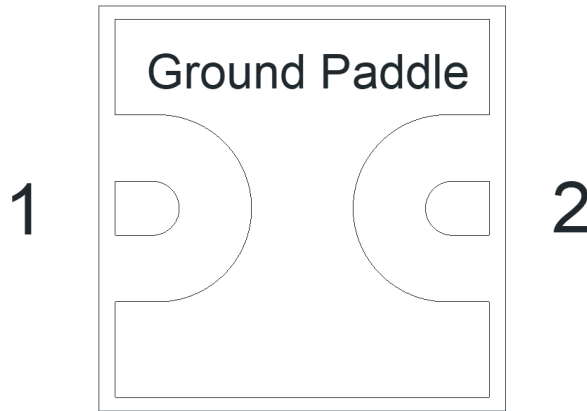
- **Device Overview**
  - General Description
  - Features
  - Applications
  - Functional Block Diagram
- **Port Configuration and Functions**
  - Port Diagram
  - Port Functions
- **Revision History**
- **Specifications**
  - Absolute Maximum Ratings
  - Package Information
  - Electrical Specifications
  - Typical Performance Plots
  - Typical Performance Plot
- **Mechanical Data**
  - Outline Drawing
- **Footprint Image**
- **Evaluation Board**
  - Evaluation Board Outline Drawing

### Revision History

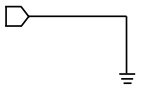
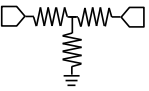
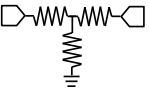
Revision Code	Revision Date	Comment
-	2025-03-24	Initial Release

### Port Configuration and Functions

#### Port Diagram



#### Port Functions

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Ground	CSP package ground path is provided through the ground paddle.	
Pin 1	Input/Output	Pin 1 and Pin 2 are DC connected to each other and ground through a T-network of resistors.	
Pin 2	Input/Output	Pin 1 and Pin 2 are DC connected to each other and ground through a T-network of resistors.	

**Specifications**

**Absolute Maximum Ratings**

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling	1	W

**Package Information**

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	1.5 x 1.5 mm
Moisture Sensitivity Level	-	MSL 3

#### Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the attenuator in a CSP1 package with a sine wave input applied to port 1.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Attenuation	Configuration A, Temp = 25°C	0	70	-	1.3	-	dB
Return Loss	Configuration A, Temp = 25°C	0	70	-	23	-	dB
Attenuation Flatness <sup>1</sup>	Configuration A, Temp = 25°C	0	70	-	0.7	-	dB
Impedance	-	-	-	-	50	-	Ω

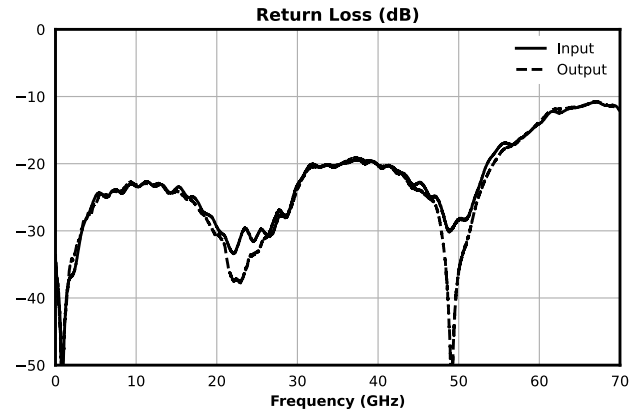
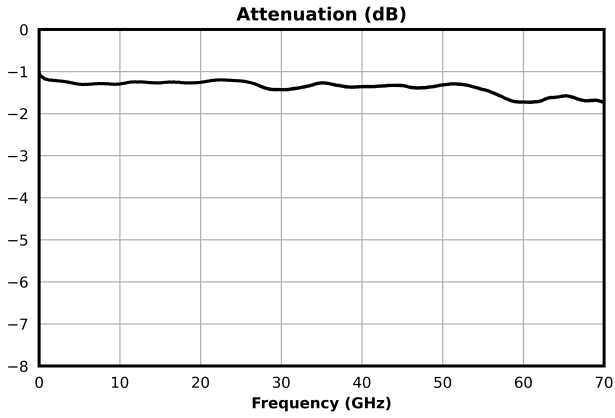
<sup>[1]</sup> Attenuation Flatness = Max(Insertion Loss) - Min(Insertion Loss)

## ATN01-0070CSP1

Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator

### Typical Performance Plots

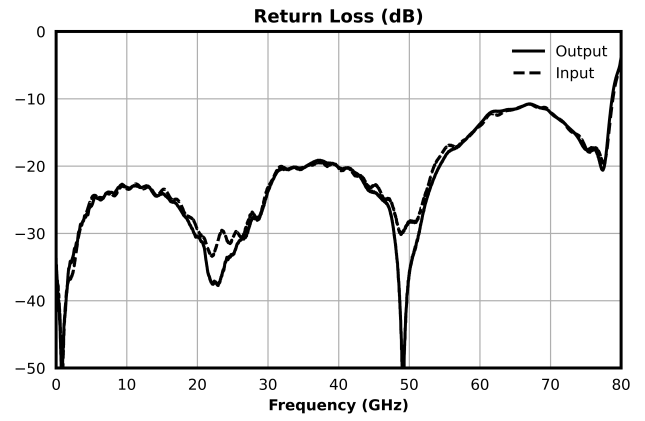
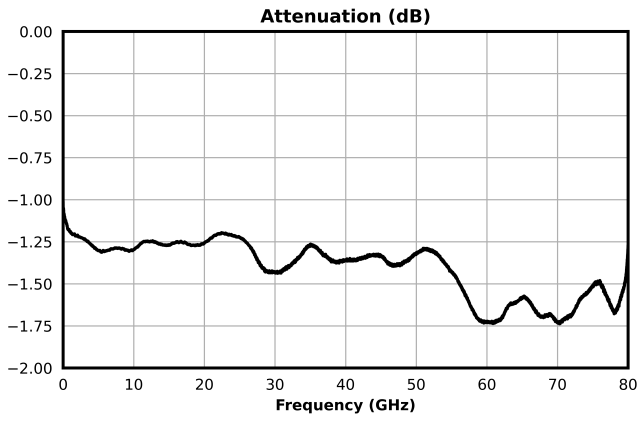
Electrical performance data is de-embedded to the CSP package ports.



## ATN01-0070CSP1

Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator

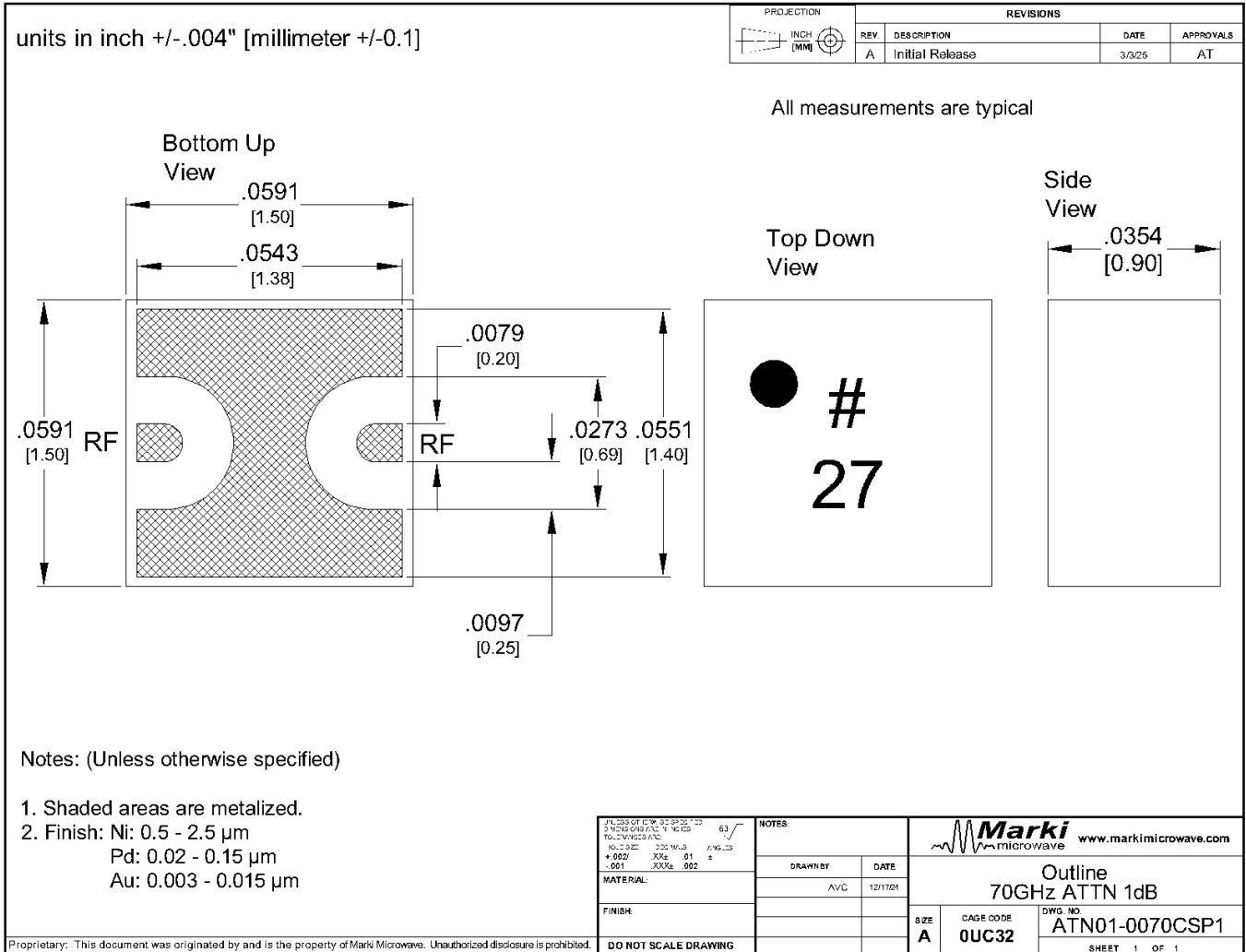
### Typical Performance Plot



### Mechanical Data

### Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)



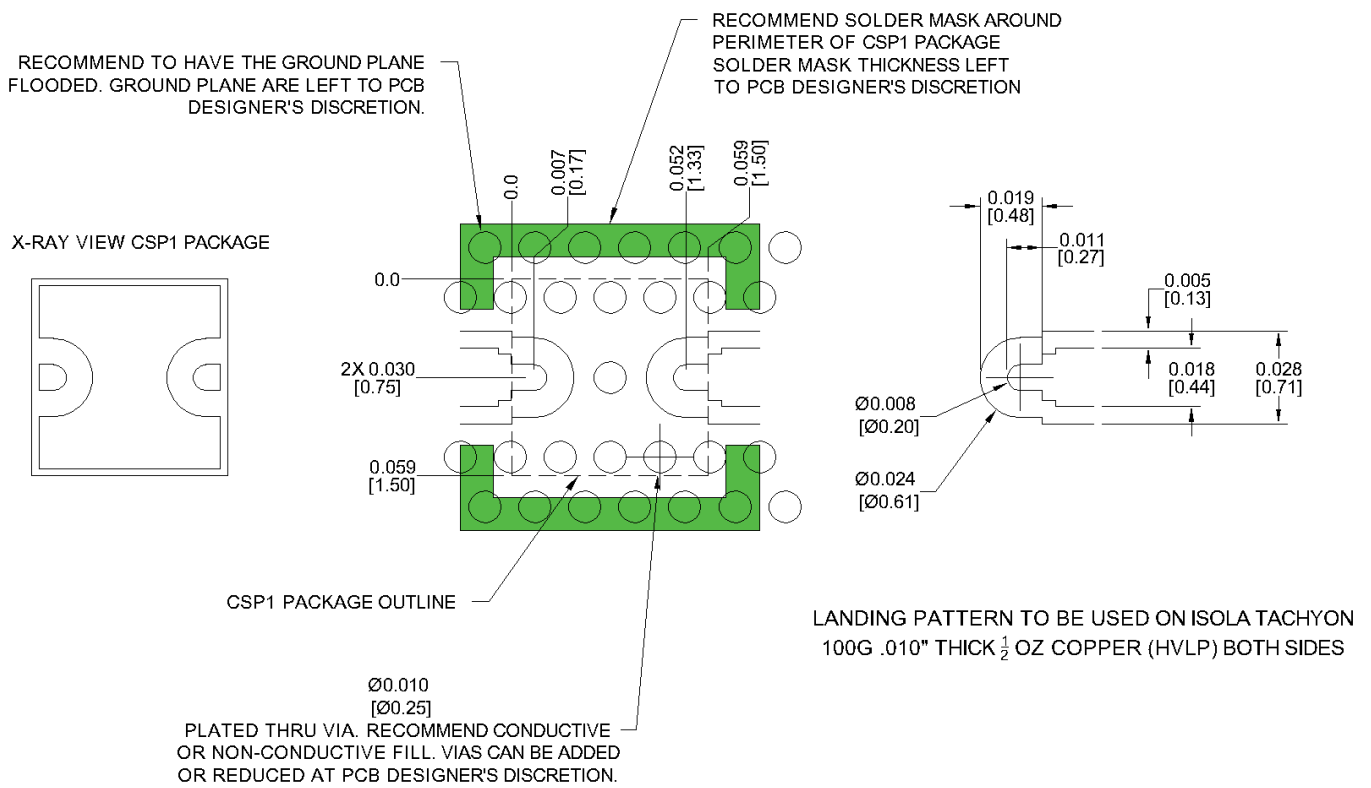
## ATN01-0070CSP1

Chip Scale Package MMIC DC - 70 GHz 1dB  
Attenuator

### Footprint Image

Download : [Footprint Drawing](#)

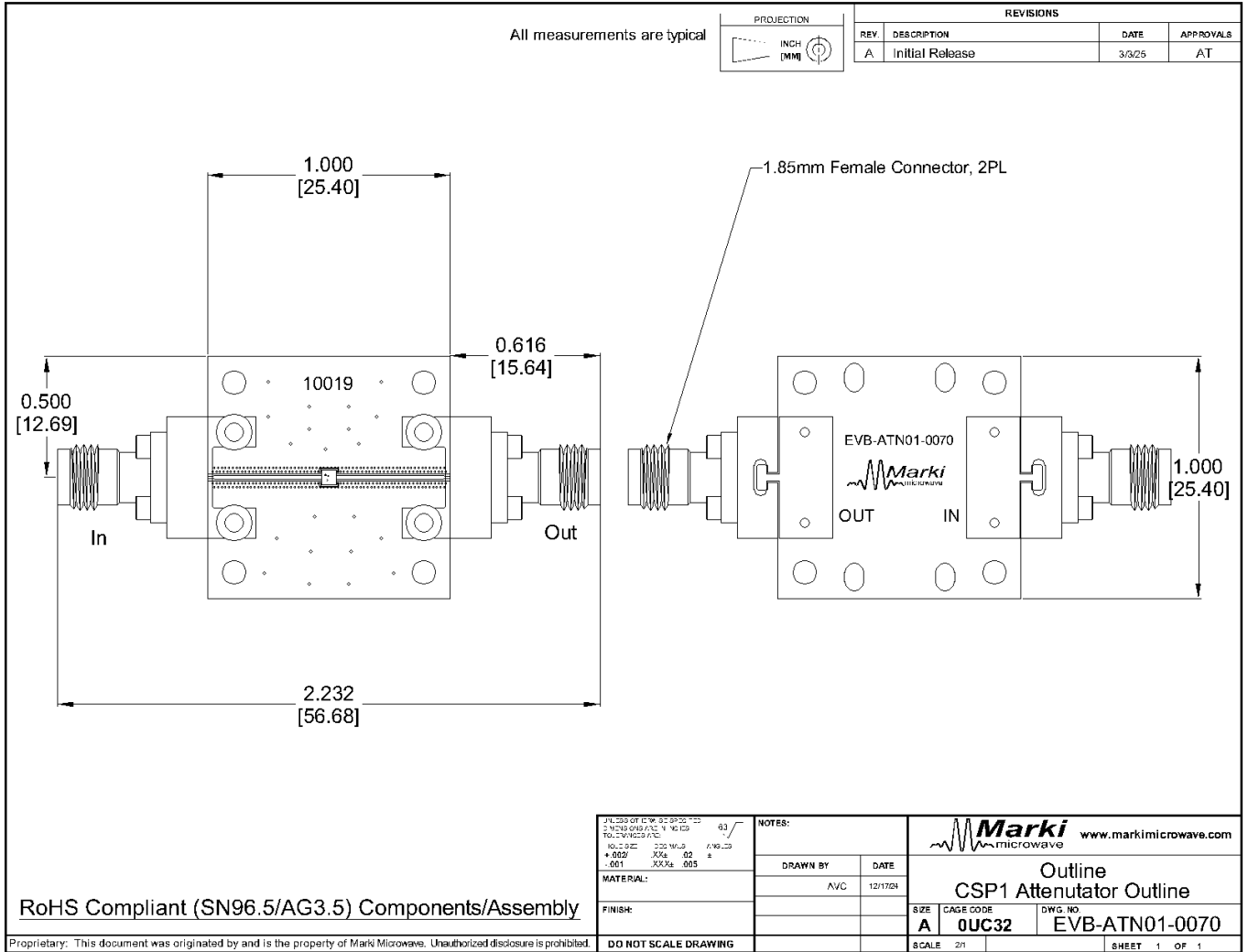
\*PRIMARY DIMENSIONS ARE IN INCHES



# ATN01-0070CSP1

Chip Scale Package MMIC DC - 70 GHz 1dB Attenuator

## Evaluation Board - Outline Drawing



**DISCLAIMER**

MARKI MICROWAVE, LLC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, LLC. All other trademarks used are the property of their respective owners.

© 2025, Marki Microwave, LLC